

Notice of Allowability

Application No.

10/690,124

Examiner

Cheukfan Lee

Applicant(s)

MANGERSON, MARK M.

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to a terminal disclaimer filed December 15, 2007.
2. ☒ The allowed claim(s) is/are 1-24.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Cheukfan Lee

1. Claims 1-24 are allowed. Claims 1, 15 and 21 are independent.

Please Note that the above claim numbers are the result of renumbering the originally filed claims. See description in section 1 of the Office action mailed Oct. 26, 2007. Section 1 states that claims 1-11 and 13-25 have been renumbered as claims 1-24, respectively, and the dependencies of the claims have also been changed accordingly. Specifically, claims 13-25 have been

For convenience and to avoid confusion, the renumbered claims along with the changed dependencies are listed below.

Since the originally filed claims filed Oct. 21, 2003 does not include claim number 12 (see the 5-page claim list with "Date" 10/21/2003), the LIE had changed claim numbers 13-25 to 12-24 as required by Rule 1.126. However, the LIE did not change the dependencies of those claims accordingly. (See eDan, the 4-page claim list with the "Date" 10/21/2003.) Therefore, the examiner thinks that the list of claims below with the changed dependencies is necessary.

1. An image scanning assembly for scanning an image of an object, comprising:

an optical shutter assembly including a plurality of individually actuateable shutter elements for substantially allowing or blocking transmission of light wherein at least a

portion of the light is one of reflected from and transmitted through the object through said optical shutter assembly;

an optical sensor for sensing light reflected from or transmitted through the object through said optical shutter assembly;

wherein selected ones of said plurality of shutter elements are actuated in a predetermined sequence for allowing light reflected from or transmitted through the object to pass through the optical shutter assembly whereupon the light is sensed by said optical sensor.

2. The image scanning assembly as claimed in claim 1, further comprising a light source for emitting light for illuminating the object.

3. The image scanning assembly as claimed in claim 2, wherein said light source comprises a strobe light source for generating high intensity pulses of light.

4. The image scanning assembly as claimed in claim 1, further comprising a backlighting light source for transmitting light through the object.

5. The image scanning assembly as claimed in claim 1, further comprising a light guide assembly for at least one of conducting light to said optical shutter assembly and conducting light reflected from or transmitted through the object to said optical sensor.

6. The image scanning assembly as claimed in claim 5, wherein said light guide assembly comprises a plurality of light conducting columns for conducting light along an axis of the image scanning assembly.

7. The image scanning assembly as claimed in claim 6, further comprising a light source for generating high intensity pulses of light, each of said plurality of light conducting columns including a color adjustment assembly for adjusting the color of said pulses of light conducted by said light conducting column.

8. The image scanning assembly as claimed in claim 6, further comprising a strobe light source for generating high intensity pulses of light, each of said plurality of light conducting columns including a color filter for filtering pulses of light emitted by said light source into at least one color and a shutter element for selecting the color of said pulses of light conducted by said conducting columns.

9. The image scanning assembly as claimed in claim 8, wherein each of said color filter elements comprises red, blue, and green filters for providing the red, blue and green light.

10. The image scanning assembly as claimed in claim 9, wherein said color filter comprises a liquid crystal shutter element for adjusting the proportion of light passing through said red, green and blue filters.

11. The image scanning assembly as claimed in claim 9, wherein each of said light conducting columns further comprises a diffuser for diffusing, randomizing and mixing light passing through said liquid crystal shutter element.

12. The image scanning assembly as claimed in claim 6, wherein each of said light conducting columns further comprises a polarizer.

13. The image scanning assembly as claimed in claim 6, further comprising a polarizing layer disposed between said plurality of light conducting columns and said plurality of shutter elements.

14. The image scanning assembly as claimed in claim 1, wherein each of said plurality of shutter elements comprises an elongated liquid crystal shutter row.

15. An image scanning assembly for scanning an image of an object, comprising:

a light source for backlighting the object so that light is at least partially transmitted through the object;

an optical shutter assembly including a plurality of individually actuateable shutter elements for substantially allowing or blocking light transmitted through the object from said light source through said optical shutter assembly;

a plurality of optical sensors for sensing light transmitted through the object and said optical shutter assembly;

a light guide assembly for conducting light transmitted through the object and said optical shutter assembly to said optical sensor,

wherein selected ones of said plurality of shutter elements are actuated in a predetermined sequence for allowing light transmitted through the object to pass through the optical shutter assembly whereupon the light is sensed by said plurality of optical sensors.

16. The image scanning assembly as claimed in claim 15, wherein said light guide assembly comprises a plurality of light conducting columns for conducting light along an axis of the image scanning assembly from said optical shutter assembly to said plurality of optical sensors.

17. The image scanning assembly as claimed in claim 15, wherein each of said plurality of shutter elements of said shutter assembly comprises an elongated liquid crystal shutter row.

18. The image scanning assembly as claimed in claim 15, wherein said optical sensor comprises a color image sensor having red, blue and green sensing elements for sensing red, blue and green light.

19. The image scanning assembly as claimed in claim 15, further comprising a color filter assembly for filtering light transmitted by said optical shutter assembly into at least one color.

20. The image scanning assembly as claimed in claim 19, wherein said color filter assembly comprises red, blue, and green color filters.

21. An image scanning assembly for scanning an image of an object, comprising:

an optical shutter assembly including a plurality of individually actuateable means for substantially allowing or blocking transmission of light wherein at least a portion of the light is one of reflected from and transmitted through the object through said optical shutter assembly;

means for sensing light reflected from or transmitted through the object through said optical shutter assembly;

wherein selected ones of said plurality of means for allowing or blocking transmission of light are actuated in a predetermined sequence for allowing light reflected from or transmitted through the object to pass through the optical shutter assembly whereupon the light is sensed by said sensing means.

22. The image scanning assembly as claimed in claim 21, further comprising a means for emitting light for illuminating the object.

23. The image scanning assembly as claimed in claim 21, further comprising a means for transmitting light through the object.

24. The image scanning assembly as claimed in claim 21, further comprising means for conducting light reflected from or transmitted through the object to said sensing means.

2. The following is an examiner's statement of reasons for allowance:

The approved terminal disclaimer has overcome the obviousness-type double patenting of claims 1-24.

Claims 1 and 15 are allowable over the prior art of record because the prior art does not teach an image scanning assembly for scanning an image of an object, comprising an optical shutter assembly and an optical sensor as claimed, wherein selected ones of the plurality of shutter elements of the optical shutter assembly are actuated in a predetermined sequence for allowing light reflected from or transmitted through the object to pass through the optical shutter assembly whereupon the light is sensed by the optical sensor.

Claim 21 recites limitations similar to those of claim 1 but in a means-plus-function format and thus is allowable for the reason given for claim 1.

Claims 2-14 depend on claim 1. Claims 16-20 depend on claim 15. Claims 22-24 depend on claim 21.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheukfan Lee whose telephone number is (571) 272-7407. The examiner can normally be reached on 9:30 a.m. to 6:00 p.m., Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (571) 272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Cheukfan Lee
February 15, 2008